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Short report

To what extent does socioeconomic status explain differences in health between Roma and non-Roma adolescents in Slovakia?☆

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ABSTRACT

The Roma make up one of the largest ethnic groups in Europe. The few studies that are available report health among the Roma as considerably worse than that of the majority population, and virtually nothing is known about the health status of Roma adolescents. The purpose of this study was to compare the self-reported health outcomes of Roma adolescents living in Roma settlements with adolescents from the majority population and to assess the impact of socioeconomic status on the results obtained. We conducted a survey among Roma adolescents ($N = 330$, mean age = 14.5) and non-Roma adolescents ($N = 722$, mean age = 14.9) living in eastern Slovakia. We gathered data on sociodemographic position, self-rated health (using the SF-36), the occurrence of accidents and injuries during the past year, healthcare utilization during the past year, health complaints, mental health and social desirability. Roma adolescents reported poorer self-rated health, more accidents and injuries during the past year and more frequent use of healthcare during the past year, though fewer health complaints. Furthermore, they reported more prosocial behaviour than non-Roma. No differences appeared in total difficulties. Socio-economic status decreased the association of ethnicity with health outcomes. Adjustment for social desirability had a significant effect on the differences for all outcomes, except for accidents and injuries during the past year.

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Introduction

Roma (Romanies, Gypsies) constitute one of the largest minorities in Europe, especially in Central Europe, where they make up a relatively large part of the population. In contrast to recent immigrants, Roma came to Europe centuries ago and have spread throughout Europe. Estimates of the number of Roma living in Europe range from 5 to 10 million, with most Roma concentrated in Romania, Bulgaria, Hungary, Czech Republic and Slovakia (Kosa et al., 2007). Their history in the region can be described as a combination of peaceful coexistence and blatant discrimination with multiple and complex causes, among which are their remarkably preserved traditions and resistance to assimilation (Koupilova, Epstein, Holcik, Hajioff, & Mckee, 2001).

Census data show the problems in obtaining an accurate estimate of the Roma population. In Slovakia, for example 89,920 citizens declared themselves as ethnic Roma in the 2001 census (1.7% of the total population of the Slovak Republic), but unofficial estimates range up to 750,000 Roma in Slovakia (Koupilova et al., 2001). We adhere to the estimates of the Demographic Research Centre, which indicates 380,000 Roma living in the Slovak Republic, or 7.2% of the total population (Filadelfiová, Gerbery, & Škoblá, 2007).

We can distinguish three types of habitation among Roma according to the UNDP report (Filadelfiová et al., 2007). The *diffused or scattered type* describes a group of Roma who are integrated among the majority population in a town or village. The *separated type* refers to a Roma population concentrated in a certain part of a town or village – either within or on the outskirts. And finally, the *segregated type* denotes a settlement remote from towns and villages or separated by a barrier. There are variations in the living conditions between these three categories, the best being in the diffused or scattered type and worst in the segregated type. Probably about half of the Roma population live separated or segregated

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(Reynolds, 2005), though estimates vary considerably (Ringold, Orenstein, & Wilkens, 2005). According to the UNDP report (Filadelfiová et al., 2007), nearly 18 percent of the Roma in Slovakia live in substandard conditions, most of these in segregated settlements.

Roma are well-known for their low educational status, high unemployment and poverty and for living in very poor conditions, especially those Roma living in settlements. All of these factors result in very low socioeconomic status (SES) and may contribute to worse health among Roma. Many studies have found an association between SES and health in non-Roma populations (e.g. Craig, 2005; Dunn, Veenstra, & Ross, 2006; Lawlor & Sterne, 2007; van Lenthe et al., 2004; Nazroo, Jackson, Karlsen, & Torres, 2007; Nazroo, 2003; Zwi, Leon, Koupilova, Sethi, & McKee, 2001). The way in which SES affects health is complex and includes access to healthcare and quality, various health-related behaviours, individual psychosocial processes and physical and social environments. But in general, diseases are more prevalent and life expectancy shorter among people with a lower SES.

Only a few publications can be found in the literature on the subject of Roma health, and most focus on genetic, biological, medical or anthropological topics related to infectious diseases or hereditary defects (Koupilova et al., 2001; Vozarova de Courten et al., 2003; Zeman, Depken, & Senchina, 2003). In general, Roma seem to have poorer health than majority populations (Hajioff & McKee, 2000; Parry et al., 2007; Sepkowitz, 2006; Van Cleemput, Parry, Thomas, Peters, & Cooper, 2007; Zeman et al., 2003). They are reported to have a higher prevalence of coronary artery disease, obesity, hyperlipidaemia and diabetes mellitus compared to the majority, and a higher occurrence of both health complaints and mental health problems (Goward, Repper, Appleton, & Hagan, 2006; Hajioff & McKee, 2000; Nesvadbova, Rutsch, Kroupa, & Sojka, 2000; Sepkowitz, 2006; Vozarova de Courten et al., 2003).

Most of the studies mentioned focused on adult Roma. There is little or no evidence on the health of Roma children or adolescents. Similarly, previous research has been interested mainly in diseases and mortality, with few focused on mental health, self-perception of health (self-rated health), health complaints, injuries and healthcare utilization (Filadelfiová et al., 2007; Kosa et al., 2007). There is also no clear evidence about whether the poorer health of Roma can be explained by their adverse SES.

The aim of this study was to explore self-reported health status and other health outcome variables (health complaints, accidents and injuries, healthcare utilization, mental health) in Roma adolescents compared to non-Roma adolescents and to assess the contribution of SES to these differences.

Methods

Procedure

The Roma sample was recruited via elementary schools in small towns and villages in the eastern part of Slovakia which met the following criteria: at least 30 children aged 13 years or older currently living in Roma settlements (segregated and separated type); the school was able to offer separate rooms where interviews could be conducted; and the school provided a list of children suitable for our study who could be randomly chosen and asked to participate in the interview. We contacted 22 elementary schools in the study area that comprised separated or segregated communities of Roma whose children potentially could attend schools. Fifteen of these fulfilled our criteria. One was not willing to participate, but the other 14 were willing to participate in the study. From the lists of pupils living in Roma settlements prepared by the schools, we chose respondents randomly while trying to include a similar proportion of boys and girls. Respondents were

interviewed individually during regular class time by community workers with ample experience in working with Roma and trained for our study. The interviews lasted from 30 to 65 min.

Because non-Roma pupils in schools with higher proportions of pupils from Roma settlements might not be representative of all non-Roma adolescents, we decided to recruit a non-Roma sample from elementary schools in the same geographical area with no evident Roma community in the neighbourhood. We identified 25 such schools in the Košice and Prešov regions of eastern Slovakia and contacted a random sample of 15 of them. Eleven of these schools were willing to participate, but two of these were excluded because they did not have at least one class of 8th and 9th grade that were not included previously in a research project of our department. The questionnaires were administered during regular class time (45 min) by our trained and experienced research assistants. The questionnaire asked the same questions as the structured interview in the Roma sample.

The study was approved by the Ethics Committee of the Faculty of Science at P.J. Safarik University in Košice in August 2005. Data were collected from May–June 2007. Parents were informed of the study via the school administration and could opt out if they disagreed. Participation in the study was fully voluntary and anonymous, with no explicit incentives provided for participation.

Student respondents

The sample of Roma adolescents consisted of 330 Roma elementary pupils, all of whom live in Roma settlements in or near small towns and villages (the segregated and separated types) in eastern Slovakia. The sample comprised 160 boys (48.5%) and 170 girls (51.5%) with ages ranging from 12 to 17 years (mean age = 14.50; SD = 1.03). The response rate was 99.7%.

The sample of non-Roma adolescents consisted of 722 8th and 9th grade pupils, of whom 354 were boys (53.2%) and 312 girls. Ages ranged from 14 years to 17 years, with a mean age of 14.86 (SD = 0.63). The response rate was 95.9%.

Measures

Self-rated health (SRH) was measured with one item of the SF-36 questionnaire (Ware & Sherbourne, 1992). Respondents were asked to assess their health as (1) excellent, (2) very good, (3) good, (4) fairly good or (5) bad. The last three responses were merged into one category according to the dichotomization used by Geckova et al. (2004), because standard dichotomization resulted in unbalanced categories. The use of a different cutoff led to very similar results. This measure is widely used in health studies as an indicator of general health status, because it is a good predictor of mortality and morbidity (Mathews, Manor, & Rautava, 1999; Sadava, O'Connor, & McCreary, 2000).

Respondents were asked if they had suffered from one of the following *health complaints* during the last month: headache, stomach ache, cold, flu, symptoms from muscles, back-pain, anxiety, coughing, fatigue, sleeplessness, stress, constipation, diarrhoea, allergy or others (von Bothmer & Fridlund, 2003). The possible answers were yes/no. The sum of health complaints was analysed.

Healthcare utilization was measured with two questions with a dichotomized answer (yes/no): Have you had to see a doctor during the last month because of serious sickness? Have you been in hospital during the last year? Similarly, we asked about *Accidents and injuries* with three questions: Have you burnt yourself so badly that you had to see a doctor during the last year? Have you cut yourself by accident so badly you had to see a doctor during the last year? Have you broken a bone during the last year? (Bolland, 2003).

Answers about healthcare utilization were summed and used to produce one general variable. We similarly summed answers about accidents and injuries. Both variables were dichotomized as 0 and 1 or more, with a score of 1 indicating hospitalization, accident or injury, respectively, during the last year.

Children's mental health was measured with the Strength and Difficulties Questionnaire (SDQ) (Goodman, Meltzer, & Bailey, 1998). This is a recently developed questionnaire for assessing mental health problems in children and adolescents. Its reliability and validity are generally satisfactory (Goodman, 2001, Goodman et al., 1998). We used the prosocial scale (5 items, $\alpha = 0.68$) and the total difficulties scale (TDS; 20 items, $\alpha = 0.71$), covering positive and negative aspects of mental health (i.e. 'strengths' and 'difficulties'), respectively. The difficulties scale covers hyperactivity symptoms, emotional symptoms, conduct problems and peer problems. The prosocial scale covers behaviours such as the willingness to share things with others, helpfulness, kindness and consideration for another's feelings. Each of the SDQ items was scored from 0 to 2, with the options not true, somewhat true, or certainly true. Higher scores on these two scales indicate higher levels of difficulties and lack of prosocial behaviours, respectively. The cutoff points reported by Koskelainen, Sourander, and Vauras (2001) were used to dichotomize the Difficulties Score (cutoff point 17/18) and the prosocial score (cutoff point 4/5).

Social desirability is the tendency of respondents to reply in a manner that will be viewed favourably by others. Higher social desirability can thus affect the validity of the results. It was measured using the Social Desirability Response Set (SDRS-5) (Hays, Hayashi, & Stewart, 1989). The scale inquires about common situations to which people are prone to respond favourably (e.g.: "No matter who I'm talking to, I'm always a good listener"). The five

items are rated using a five-point Likert scale (definitely true, mostly true, don't know, mostly false, definitely false). The total score is counted only from the extreme answers of each item (e.g. definitely or mostly true scored 1 point), meaning total score ranges from 0 to 5 points, with a higher total score indicating higher levels of socially desirable responses. Cronbach's α for the current sample was 0.53, but the mean inter-item correlation was 0.19, which suffices. According to Clark and Watson (1995) and Parker, Taylor, and Bagby (2003), the mean inter-item correlation should not be less than 0.15.

Statistical analysis

First, all outcome variables were dichotomized, with the exception of the health complaints variable, and then the frequencies (and means in the case of continuous variables) for independent and outcome variables were computed. Logistic and linear regression analyses (regarding health complaints) were used to assess differences in health by ethnicity and the degree to which SES and social desirability, when entered subsequently, could account for these ethnic differences. Gender was controlled for in all analyses because of differences in the gender composition of the two samples. We used four regression models for an explanation of the differences. Model 1 tested the crude effect of ethnicity on the outcome variables; Model 2 tested the effect of ethnicity when controlling for gender where male = 1 and female = 0; Model 3 contained variables of ethnicity, gender and SES; and finally Model 4 contained all variables from Model 3 plus social desirability. In all regression analyses we used sets of dummy variables for each categorical variable. All analyses were performed using statistical software SPSS 14.0 for Windows.

Table 1

Background characteristics (demography, socioeconomic position and social desirability) of the Roma and non-Roma samples.

	Roma N = 330	%	non-Roma N = 722	%	chi-square or Student's <i>t</i> statistic; <i>p</i> value
Gender					
boys	160	48.5	354	53.2	$\chi^2 = 1.93$; ns
girls	170	51.5	312	46.8	
Father's education					
elementary	169	54.2	18	2.6	$\chi^2 = 499.80$; $p < 0.001$
apprenticeship	116	37.2	144	21.2	
secondary	20	6.4	328	48.2	
university	7	2.2	190	27.9	
Mother's education					
elementary	231	74.3	32	4.6	$\chi^2 = 603.20$; $p < 0.001$
apprenticeship	62	19.9	114	16.5	
secondary	16	5.1	340	49.1	
university	2	0.6	206	29.8	
Parents' highest education					
elementary	154	47.8	9	1.3	$\chi^2 = 597.00$; $p < 0.001$
apprenticeship	132	41.0	82	11.6	
secondary	28	8.7	338	47.9	
university	8	2.5	277	39.2	
Father's employment status					
employed	129	43.9	596	91.1	$\chi^2 = 249.96$; $p < 0.001$
unemployed	165	56.1	58	8.9	
Mother's employment status					
employed	26	9.0	595	87.2	$\chi^2 = 537.80$; $p < 0.001$
unemployed	262	91.0	87	12.8	
Social desirability					
answered	327	99.1	671	92.9	$t = 15.05$; $p < 0.001$
mean (SD)	2.17 (1.29)		1.00 (1.08)		

Note: In the table only valid percentages are presented. The missing cases for each variables are as follows: *gender* 0% Roma, 7.8% non-Roma; *father's education* 5.5% Roma, 5.8% non-Roma; *mother's education* 5.8% Roma, 4.2% non-Roma; *Parents' highest education* 2.5% Roma, 2.2% non-Roma; *father's employment status* 10.9% Roma, 10.0% non-Roma; *mother's employment status* 12.7% Roma, 5.5% non-Roma; *social desirability* 0.9% Roma, 7.1% non-Roma.

Results

The final data set consisted of 1052 respondents. Of the Roma respondents, 22 (6%) reported an age under 13 years. Exclusion of these 22 did not affect any of our results as reported. The socio-demographic characteristics of the samples are shown in Table 1. This table shows the large differences in parents' education and employment status between Roma and non-Roma respondents.

Proportions of dichotomized variables or means and standard deviations (SD) of health outcome variables of the samples with chi-square or *t*-test statistics are presented in Table 2.

Our results show that Roma respondents reported poorer self-rated health, more accidents and injuries and greater use of healthcare during the last year than non-Roma respondents, crude (Table 3, Model 1) and after adjustment for gender (Table 3, Model 2) Roma reported fewer health complaints and were more likely to be prosocial. There were no significant differences in reported behavioural difficulties between Roma and non-Roma on the Difficulties scale.

To assess the relative contribution of SES to health differences by ethnicity, we added parents' highest education to the model (Model 3). Parents' education markedly weakened the association of ethnicity with SRH and healthcare use and to some degree with injuries, health complaints and difficulties rather slightly. We repeated the analyses with the inclusion of parental employment status, but this led to very similar results (not shown). We also assessed whether the effect of gender and SES was modified by ethnicity; this did not show any statistically significant interaction effect (not shown).

Finally we assessed whether the tendency to answer questions in a socially desirable way influenced associations with ethnicity (Model 4). Social desirability was associated with statistical significance to all variables except injuries and healthcare use. Its effect on the association of ethnicity with the outcomes was relatively small, though, with some ethnic differences becoming somewhat smaller (healthcare utilization, health complaints) and some becoming somewhat larger (SRH, difficulties and prosocial behaviour, injuries). Sensitivity to social desirability did not change the direction of the observed differences in prosocial behaviour, but did explain a part of these differences.

Discussion

Roma adolescents were more likely to report worse self-rated health than their non-Roma counterparts, to have used healthcare and to have reported an accident or injury during the last year. In contrast, Roma reported fewer health complaints (the occurrence of various symptoms) than non-Roma. Results showed no differences between Roma and non-Roma in behavioural difficulties.

SES, measured in our study by the highest achieved level of education of parents, notably accounted for some of the ethnic differences in health, though it did not on its own strongly relate to health. Thus factors other than SES, such as discrimination, poor access to healthcare, health behaviour differences, cultural-linked attitudes to health (fatalism), fear of doctors, resistance to assimilation leading to non-use of various services and poor housing, might play a role here. This corresponds with other studies showing that the poorer health status of immigrant groups could only partially be explained by SES (Reijneveld, 1998). An important direction for future research may be to examine these other variables.

Our findings about the worse health of Roma are consistent with most previous studies, which focused primarily on Roma adults or children in general (Hajioff & Mckee, 2000; Parry et al., 2007; Van Cleemput et al., 2007; Zeman et al., 2003). In contrast to the studies which assessed Roma health using biomedical methods, our study investigated perceived health status and thus adds evidence on Roma health status from a different perspective. Concerning mental health, Roma adolescents did not report difficulties more frequently, but they did report prosocial behaviour more frequently than non-Roma.

Strengths and limitations

Although Roma are considered to be a hard-to-reach population, we succeeded in collecting data from a considerable sample of Roma adolescents and in achieving a sufficient response rate among the Roma and non-Roma samples. Another strength of this study was our use of the standardized health outcome measures that are used broadly in a wide range of research settings.

Table 2
Health outcomes among the Roma and non-Roma samples.

	Roma N = 330	%	non-Roma N = 722	%	chi-square or Student's <i>t</i> statistic; <i>p</i> value
Self-rated health					
good health status	166	50.3	522	74.1	$\chi^2 = 57.38; p < 0.001$
poor health status	164	49.7	182	25.9	
Accidents & Injuries during last year					
No injury	241	73.3	571	80.6	$\chi^2 = 7.24; ns$
at least one injury	88	26.7	137	19.4	
Healthcare use during last year					
no use	131	39.8	459	64.7	$\chi^2 = 56.89; p < 0.001$
at least once	198	60.2	250	35.3	
Health complaints					
number	310	93.9	573	79.4	$t = -5.26; p < 0.001$
mean (SD)	24.13 (2.94)		25.24 (3.04)		
SDQ (dichotomized) Difficulties Score					
low difficulties & problems	246	76.2	471	77.6	$\chi^2 = 0.25$ ns
high difficulties & problems	77	23.8	136	22.4	
Prosocial scale					
high prosociality	316	96.3	562	83.1	$\chi^2 = 35.09; p < 0.001$
low prosociality	12	3.7	114	16.9	

Note: In the table only valid percentages are presented. The missing cases for each variables are as follows: self-rated health 0% Roma, 2.5% non-Roma; injuries during last year 0.3% Roma, 1.9% non-Roma; healthcare use during last year 0.3% Roma, 1.8% non-Roma; health complaints 6.1% Roma, 20.6% non-Roma; total diff. score 2.1% Roma, 15.9% non-Roma; prosocial scale 0.6% Roma, 6.4% non-Roma.

Table 3

Associations of ethnicity with health outcomes: odds ratios (OR) or beta coefficients (B), and the significance of model change (smc) after inclusion of additional variables.

	SRH bad/fair (<i>N</i> = 918)		Injuries (<i>N</i> = 921)		Healthcare use (<i>N</i> = 922)		Health complaints (<i>N</i> = 790)		Difficulties (<i>N</i> = 837)		Prosocial scale (<i>N</i> = 899)	
	OR (95% CI)	smc	OR (95% CI)	smc	OR (95% CI)	smc	B (95% CI)	smc	OR (95% CI)	smc	OR (95% CI)	smc
Model 1												
Ethnicity (Roma vs. non-Roma)	3.01 (2.25, 4.01)***	***	1.57 (1.14, 2.17)**	**	2.77 (2.09, 3.66)***	***	−1.01 (−1.44, −0.58)***	***	1.04 (0.74, 1.45)	ns	0.19 (0.10, 0.35)***	***
Model 2												
Ethnicity (Roma vs. non-Roma)	3.00 (2.25, 4.01)***	**	1.67 (1.20, 2.32)**	***	2.76 (2.09, 3.65)***	ns	−0.98 (−1.40, −0.55)***	***	1.04 (0.74, 1.45)		0.19 (0.10, 0.35)***	***
Gender (males vs. females)	0.65 (0.49, 0.87)**		2.80 (1.99, 3.93)***		0.91 (0.69, 1.19)		0.85 (0.43, 1.26)***		0.79 (0.57, 1.09)		2.40 (1.56, 3.69)***	
Model 3												
Ethnicity (Roma vs. non-Roma)	1.96 (1.25, 3.06)**	ns	1.42 (0.84, 2.41)	ns	1.86 (1.21, 2.87)**	*	−0.76 (−1.42, −0.10)***	ns	0.97 (0.56, 1.68)	ns	0.24 (0.10, 0.57)***	ns
Gender (males vs. females)	0.65 (0.49, 0.87)**		2.81 (2.00, 3.95)***		0.91 (0.69, 1.19)		0.83 (0.42, 1.25)***		0.80 (0.58, 1.11)		2.40 (1.56, 3.70)***	
Parents' highest education ^a												
apprenticeship	0.89 (0.57, 1.38)		0.81 (0.49, 1.35)		1.23 (0.79, 1.92)		0.50 (−0.17, 1.16)		0.82 (0.48, 1.38)		1.05 (0.36, 3.09)	
secondary	0.55 (0.32, 0.97)*		0.79 (0.42, 1.50)		0.66 (0.39, 1.13)		0.54 (−0.28, 1.36)		0.71 (0.37, 1.40)		1.38 (0.44, 4.34)	
university	0.53 (0.29, 0.96)*		0.70 (0.35, 1.39)		0.63 (0.35, 1.11)		0.44 (−0.44, 1.31)		0.98 (0.49, 1.96)		1.40 (0.44, 4.50)	
Model 4												
Ethnicity (Roma vs. non-Roma)	2.42 (1.50, 3.90)***	**	1.58 (0.91, 2.75)	ns	1.65 (1.05, 2.61)*	ns	−1.17 (−1.86, −0.48)***	***	1.33 (0.75, 2.39)	***	0.40 (0.16, 0.99)*	***
Gender (males vs. females)	0.64 (0.48, 0.85)**		2.78 (1.97, 3.91)***		0.92 (0.70, 1.20)		0.88 (0.46, 1.29)***		0.77 (0.55, 1.07)		2.36 (1.52, 3.65)***	
Parents' highest education ^a												
apprenticeship	0.88 (0.56, 1.37)		0.80 (0.48, 1.34)		1.24 (0.79, 1.94)		0.54 (−0.12, 1.20)		0.79 (0.47, 1.35)		0.94 (0.31, 2.84)	
secondary	0.54 (0.31, 0.95)*		0.79 (0.41, 1.49)		0.67 (0.39, 1.14)		0.59 (−0.22, 1.41)		0.69 (0.35, 1.36)		1.27 (0.39, 4.15)	
university	0.53 (0.29, 0.96)*		0.70 (0.35, 1.39)		0.62 (0.35, 1.10)		0.43 (−0.44, 1.29)		0.98 (0.49, 1.98)		1.32 (0.40, 4.41)	
Social desirability	0.84 (0.74, 0.96)**		0.91 (0.79, 1.05)		1.10 (0.98, 1.24)		0.33 (0.15, 0.50)***		0.76 (0.65, 0.88)***		0.58 (0.46, 0.74)***	

p* < 0.05, *p* < 0.01, ****p* < 0.001.smc – Significance of model change for the added variable; Improvement of fit of the model due to the addition of the variable concerned (χ^2 -test in the case of logistic regression and the *F*-test in the case of linear regression).^a Elementary education was set as the reference category.

In interpreting our results one has to consider certain limitations. One of these may be that data from Roma were collected via an interview (to cope with illiteracy, for example), but data from non-Roma via self-reported questionnaires. The pros and cons of these two types of data collection should thus be considered when interpreting our results, including the higher risk of the social desirability effect and of disclosure problems (Bowling, 2005). Van Sonsbeek (1991) showed that in oral interviews respondents assess their health as very good more frequently and as good less frequently than in written surveys. No differences occurred for the other response categories. This implies that the ethnic differences found may be an underestimation of real differences.

Finally, the sample was representative for Roma adolescents who live in settlements and attend regular schools. This comprises the majority of the most Roma who live in eastern Slovakia (and as such, Central Europe). Whether our findings can also be generalized to integrated Roma living in cities has to be demonstrated, as they might differ.

Our findings emphasize the need to focus health interventions on young Roma, because their poor health is likely to lead to poor health in adulthood as well. Such interventions should be concentrated more on groups with increased health risk originating from low SES.

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